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10/677,335	10/03/2003	Syouji Ohishi	1450.1034	8774

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EXAMINER	
FILE, ERIN M	
ART UNIT	PAPER NUMBER
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	**Application No.** 10/677,335	**Applicant(s)** OHISHI, SYOUJI
	Examiner Erin M. File	**Art Unit** 2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2003*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-23* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *03 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☒ All b)☐ Some * c)☐ None of:
1.☒ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *10/3/2003*.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the judging apparatus in claims 1 and 18 are not illustrated as an apparatus, only in method in flowchart. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1-4, 6, 21, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Eriksson (U.S. Patent No. 6,628,923).

Claim 1, the applicant's admitted prior art of record teaches:

- a quasi-synchronization quadrature detector for inputting a PSK modulation signal and a carrier frequency set value, and outputting an I-axis signal and a Q-axis signal obtained by performing, based on the carrier frequency set value (specification, p. 2, line 19), quasi-synchronization quadrature detection on the PSK modulation signal (fig. 14, 1401, shows a quasi-synchronization quadrature detector according to the prior art of record as described in specification, p.2, lines 8-9);

- a timing reproducer for inputting the I-axis signal, the Q-axis signal, and a symbol rate set value, and reproducing and outputting the I-axis signal and the Q-axis signal while correcting an error of the symbol rate set value (fig. 14, 1403, shows a timing reproducer according to the prior art of record as described in specification, p. 4, lines 1-9);
- discloses a judging unit for monitoring the dispersion while varying the carrier frequency set value and the symbol rate set value (fig. 16, S1610 varies the symbol rate and S1608 varies the frequency), and judging that a channel exists at a position of a current symbol rate set value and a current carrier frequency set value when the size of the dispersion detected by said dispersion detector becomes an extremal value (fig. 16, S1609, S1607, the channel is judged to exist when the values of FRF and SR are greater than a threshold value).

The applicant's admitted prior art of record fails to teach:

- a dispersion detector for inputting the I-axis signal and the Q-axis signal outputted by said timing reproducer, and detecting a dispersion between an amplitude of a symbol, comprising the I-axis signal and the Q-axis signal, and a reference amplitude; and

However, Erikson discloses:

- a dispersion detector for inputting the I-axis signal and the Q-axis signal outputted by said timing reproducer, and detecting a dispersion between an amplitude of a symbol, comprising the I-axis signal and the Q-axis signal, and a reference amplitude (col. 2, lines 61-67)

The use of a reference signal for the comparison of a received signal is well known in the art for the advantages of improved signal accuracy and would therefore be obvious to one skilled in the art at the time of invention to incorporate the dispersion detection as disclosed by Eriksson into the applicant's admitted prior art.

Claims 2, the prior art of record further discloses an A/D converter for converting the I-axis signal and the Q-axis signal outputted by said quasi-synchronization quadrature detector respectively from an analog format to a digital format, wherein said timing reproducer reproduces the I-axis signal and the Q-axis signal in digital formats (fig. 14, 1402I 1402Q).

Claim 3, the prior art of record further discloses timing reproducer reproduces and outputs the I-axis signal and the Q-axis signal while correcting the error of the symbol rate set value and outputs a displacement amount of the symbol rate (fig. 14, output Δs_{err}), and wherein said judging unit judges that a channel exists at the position of the symbol rate when the size of the dispersion becomes an extremal value (fig. 16, S1609, the channel is judged to exist when the values SR are greater than a threshold value) and at the position of the symbol rate according to the displacement amount outputted by said timing reproducer (the value of the displacement output from the timing reproducer is Δs_{err}, fig. 14).

Claims 4, 6, the prior art of record further discloses a gain controller for outputting a gain control signal according to the difference between the amplitude of the symbol, comprising the I-axis signal and the Q-axis signal outputted by said A/D converter or by said timing reproducer, and the reference amplitude, wherein said quasi-synchronization quadrature detector amplifies an input of the PSK modulation signal according to the gain control signal (fig. 14, 1404).

Claim 21, the prior art of record further discloses judging unit varies a variation for varying the symbol rate set value according to the symbol rate set value (fig. 16, S1610 varies the symbol rate and S1608 varies the frequency, until S1609, S1607, when the channel is judged to exist when the values of FRF and SR are greater than a threshold value).

Claim 23, the prior art of record further discloses judging unit sets, according to the symbol rate set value, a period for monitoring a dispersion value detected by said dispersion detector while varying the carrier frequency set value and the symbol rate set value (fig. 16, S1610 varies the symbol rate and S1608 varies the frequency, until S1609, S1607, when the channel is judged to exist when the values of FRF and SR are greater than a threshold value).

4. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Eriksson (U.S. Patent No. 6,628,923) and Kamiya (Japanese Patent Pub. 2001137778).

Claim 18, the applicant's admitted prior art of record teaches:

- a quasi-synchronization quadrature detector for inputting a PSK modulation signal and a carrier frequency set value, and outputting an I-axis signal and a Q-axis signal obtained by performing, based on the carrier frequency set value (specification, p. 2, line 19), quasi-synchronization quadrature detection on the PSK modulation signal (fig. 14, 1401, shows a quasi-synchronization quadrature detector according to the prior art of record as described in specification, p.2, lines 8-9);
- a timing reproducer for inputting the I-axis signal, the Q-axis signal, and a symbol rate set value, and reproducing and outputting the I-axis signal and the Q-axis signal while correcting an error of the symbol rate set value (fig. 14, 1403, shows a timing reproducer according to the prior art of record as described in specification, p. 4, lines 1-9);
- a gain controller for generating a gain control signal for amplifying the PSK modulation signal inputted to said quasi-synchronization quadrature detector by integrating positive/negative values of an output of said amplitude comparator (fig. 14, 1404, shows a gain controller according to the prior art of record as described in specification, p. 4, lines 10-16);
- an error corrector for correcting an error of a symbol comprising the I-axis signal and the Q-axis signal corrected by said carrier reproducer (fig. 14, 1406, shows an error corrector according to the prior art of record as described in specification, p. 4, lines 22-25);

- a synchronization detector for detecting a synchronization by detecting a unique word from a data row of the symbol whose error is corrected by said error corrector (fig. 14, 1407, shows a synchronization detector according to the prior art of record as described in specification, p. 4, line 26-p. 5, line 2);
- discloses a judging unit for monitoring the dispersion while varying the carrier frequency set value and the symbol rate set value (fig. 16, S1610 varies the symbol rate and S1608 varies the frequency), and judging that a channel exists at a position of a current symbol rate set value and a current carrier frequency set value when the size of the dispersion detected by said dispersion detector becomes an extremal value (fig. 16, S1609, S1607, the channel is judged to exist when the values of FRF and SR are greater than a threshold value).

The prior art of record fails to teach:

- an amplitude comparator to which the output of said carrier reproducer is inputted, for outputting the difference between an amplitude of an inputted symbol and a reference amplitude;
- a dispersion detector for detecting a dispersion between the amplitude of the symbol and the reference amplitude by integrating the absolute value of the output of said amplitude comparator;

However, Eriksson discloses

- an amplitude comparator to which the output of said carrier reproducer is inputted, for outputting the difference between an amplitude of an inputted symbol and a reference amplitude (col. 2, lines 61-67).

- a dispersion detector for detecting a dispersion between the amplitude of the symbol and the reference amplitude (col. 2, lines 61-67)

The use of a reference signal for the comparison of a received signal is well known in the art for the advantages of improved signal accuracy and would therefore be obvious to one skilled in the art at the time of invention to incorporate the dispersion detection as disclosed by Eriksson into the applicant's admitted prior art.

Eriksson fails to disclose:

- integrating the absolute value of the output of said amplitude comparator;

However, Kamiya discloses integrating the absolute value of the output of said amplitude comparator (Detailed Description, lines 15-17). Because the use of an integrator allows the comparison of the reference and received signal over a period of time, allowing for more accurate accumulation of comparison data, it would have been obvious to one skilled in the art at the time of invention to incorporate the comparator integration as disclosed by Kamiya into the combined invention of the applicant's admitted prior art and Eriksson.

Claim 19, the prior art of record further discloses an A/D converter for converting the I-axis signal and the Q-axis signal outputted by said quasi-synchronization quadrature detector respectively from an analog format to a digital format (fig. 14, 1402I, 1402Q), wherein said timing reproducer reproduces the I-axis signal and the Q-axis signal in digital formats (fig. 14, 1403).

Claim 20, the prior art of record further discloses timing reproducer reproduces and outputs the I-axis signal and the Q-axis signal while correcting the error of the symbol rate set value and outputs a displacement amount of the symbol rate (fig. 14, output Δs_{err}), and wherein said judging unit judges that a channel exists at the position of the symbol rate when the size of the dispersion becomes an extremal value (fig. 16, S1609, the channel is judged to exist when the values SR are greater than a threshold value) and at the position of the symbol rate according to the displacement amount outputted by said timing reproducer (the value of the displacement output from the timing reproducer is Δs_{err}, fig. 14).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. The term "extremal" in claims 1, 3, 9, 18, and 20 is a relative term which renders the claim indefinite. The term "extremal" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The recitation "dispersion becomes an extremal value" is not clear in its intended meaning, and is therefore rendered indefinite.

8. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign

document and are replete with grammatical and idiomatic errors. Examples of this include in Claim 13, the recitation "when noise detection is instructed", and in Claim 21, the recitation, "judging unit varies a variation for varying the symbol rate set value".

9. Claims 1 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: an output from the dispersion detector for the judging unit to monitor.

Claim Objections

10. Claim 22 is identical to Claim 21 and should be cancelled.

Allowable Subject Matter

11. Claims 5, 7-14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 1:00PM-9:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erin M. File
EMF

12/18/2006

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER